CHAPTER 2 TRAFFIC INFORMATION AND ANALYSIS

The following is a summary of the existing and future traffic conditions along the SR 303L corridor. Refer to the *Traffic Report* for more information.

2.1 TRAFFIC CHARACTERISTICS AND VEHICLE CLASSIFICATIONS

In 1992, when SR 303L opened to traffic, the new roadway accommodated between 550 and 1,100 vpd. By 2003, traffic had grown to nearly 10,000 vpd, an increase of 800% since the roadway opened in 1992. In 2004, MCDOT opened additional segments of SR 303L between Grand Avenue (US 60) and Happy Valley Road, as well as completing several upgrades and improvements.

Existing traffic data for the corridor were obtained from MCDOT and ADOT. MCDOT provided daily traffic data for the period 2002 through 2003 at selected segments along the SR 303L corridor. ADOT provided daily traffic data on I-10 and the most recent 2006 counts for SR 303L. Existing speed, classification counts, and peak hour turning movement volumes at some intersections were also provided by MCDOT. Figure 2-1 illustrates a summary of the existing traffic counts available along the roadway corridor.

Data obtained from the ADOT web site in August 2007 included counts made in 2006. These more recent counts indicate that the daily traffic volume on interim Loop 303 is now consistently 20,000 to 23,000 vph south of Bell Road to I-10. North of Bell Road, the 2006 traffic volume was just over 14,000 vpd. Traffic signals have been installed and intersections widened to include turn lanes at most of the heavier volume cross road intersections. The road is now functioning more as an urban roadway rather than as a two-lane rural highway.

The traffic volumes on I-10 have increased dramatically over the past few years. This freeway with two lanes in each direction is scheduled to be widened to four lanes in each direction east of Sarival in the next two years and to three lanes in each direction west of Sarival in the next three or four years.

Truck Volumes

In January 2004, MCDOT published a truck origin-destination study[2] specifically for SR 303L. This study indicated that trucks make up an average 13% to 17% of the existing traffic volumes (see Figure 2-1). The study also showed that 38% of the trucks traveling along SR 303L travel through the area (through trips), 25% of the trucks are destined to a location near the SR 303L corridor coming from outside the corridor (external-internal trips), and 37% are originating and ending at a location along SR 303L (internal-internal trips).

Future truck traffic was forecast on SR 303L by applying growth factors to each of the three types of trips: through, external-internal, and internal-internal trips. Through trips were estimated to grow at the rate of traffic growth of US 93 where most through trucks travel from their origin or to their destination[3]. In an October 2003 ADOT DCR entitled *US 93: Interim Improvement Project Final Design Concept Report*, traffic along US 93 was projected to increase by 70% in 2025. Historical traffic counts on US 93 indicate that traffic on US 93 is increasing even more rapidly. On this basis, the 2002 counts could double by 2025. Therefore, it was also assumed that through truck trips would double by 2030.

The external-internal truck traffic is expected to grow at the rate of the Phoenix Metropolitan Area. Based on recent forecasts in the 2003 MAG Regional Transportation Plan, the 30-year population growth from 2000 to 2030 is expected to double.

Internal-internal traffic is based upon the MAG travel forecasting model. These forecasts are presented in Section 2.2.

[2] *Loop 303 Truck Origin-Destination Study*, January 2004, Maricopa County Department of Transportation, Maricopa County, Arizona

[3] *Loop 303 Truck Origin-Destination Study*, pg. 15, January 2004, Maricopa County Department of Transportation, Maricopa County, Arizona

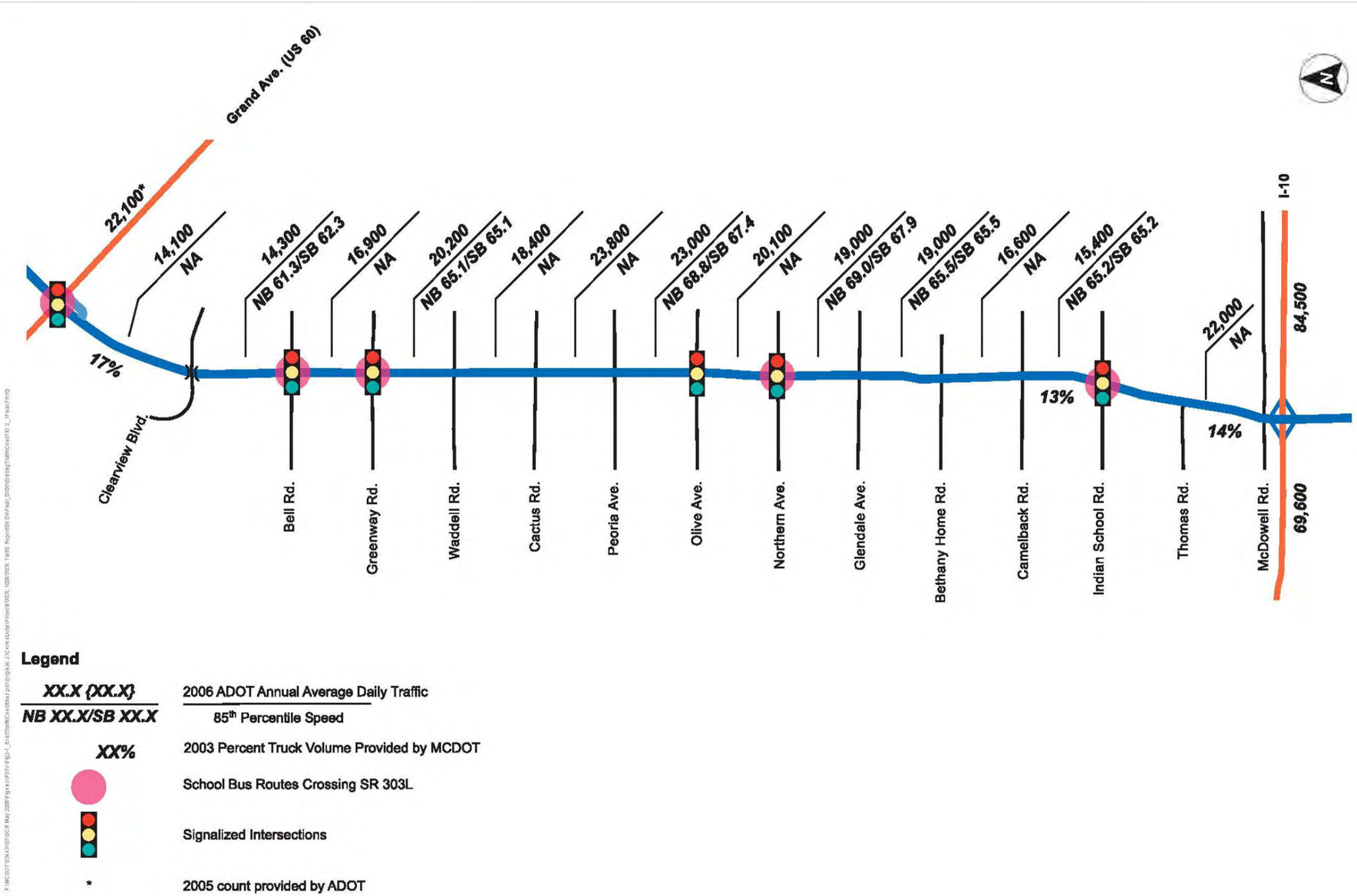

Figure 2-1 SR 303L Existing Traffic Conditions

These growth percentages were applied to estimates of existing trucks by trip type. The 2015 increases were assumed to be half of the increase from 2003 to 2030. The 2030 No Build was assumed to have the same truck percentages as the 2003 condition and the growth of through and external-internal was based on the same rates for 2030 as discussed above. The results are displayed in Table 2-1.

Table 2-1 Future SR 303L Truck Volumes

Corridor Design	Average ADT	Internal-Internal Trips	Internal-External Trips	Through Trips	Total Trips (Daily)	Trucks as % of ADT
2003 (Existing) SR 303L	9,800	544	368	559	1,470	15.0%*
2015 Initial Construction	100,000	5,550	551	838	6,939	6.9%
2030 Ultimate Construction	150,000	8,325	735	1,117	10,177	6.7%
2030 No Build	27,000	2,198	735	1,117	4,050	15.0%

*Average truck percentage from 2004 Truck Origin-Destination Study.

Based on the future truck volumes and percentages from Table 2-1, a conservative truck factor (T-factor) of 10% was used for all 2015 and 2030 freeway and ramp capacity analyses and pavement design.

2.2 GROWTH AND TRAFFIC FORECASTS

Presented in this section are growth forecasts for the corridor area and future traffic volumes derived from these forecasts as supplied by MAG.

2.2.1 Population and Employment Estimates

During preparation of population and employment forecasts in 2003, MAG anticipated significant growth to occur in the SR 303 corridor planning area over the next three decades. Until 1995, the low level of employment and population growth within the corridor, and surrounding area, did not create a substantial need for transportation and infrastructure improvements. In the last few years, the SR 303L corridor has become the western edge of the ever-expanding Greater Phoenix Metropolitan Area. Ongoing and planned developments in the corridor are rapidly creating a need for the highway.

MAG utilizes the land use elements of adopted general/comprehensive plans for cities and towns as the basis for forecasts. The general land use plans for the SR 303 corridor planning area is shown on Figure 2-2. MAG utilizes a series of geographic areas to locate the incremental population and employment growth within the Phoenix Metropolitan Area. These zones include Municipal Planning Areas (MPAs), which typically correspond with the incorporated boundaries of cities and towns; Regional Analysis Zones (RAZs), which are geographical subsets of the MPAs; and Traffic Analysis Zones (TAZs), which can be as small as one square mile. The RAZs and TAZs aggregate up to comprise the MPAs. The applicable RAZs provide the geographical unit of measure to analyze the SR 303 corridor planning area for this assignment.

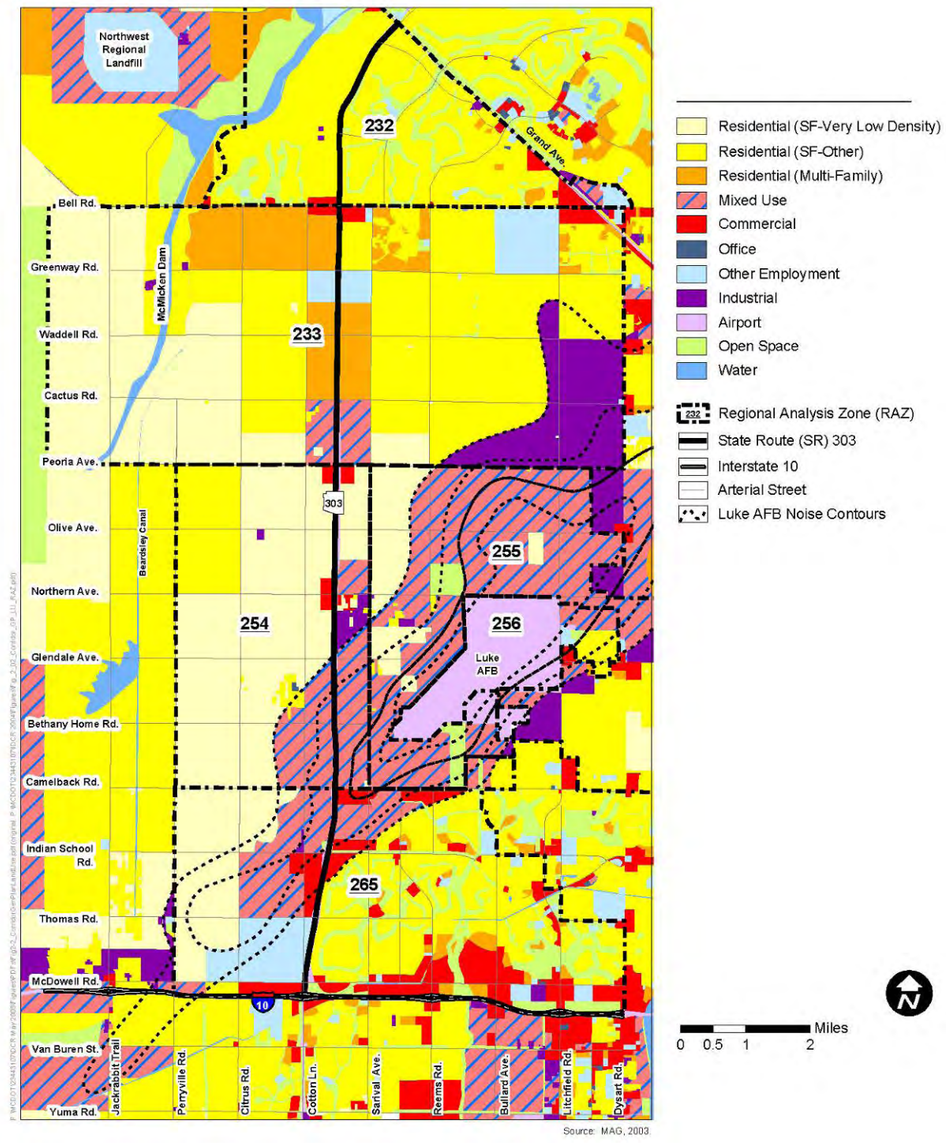

Figure 2-2 Corridor General Plan Land Use – 2004

Remarkable growth in both population and employment is projected to occur within the 303 corridor planning area in the next three decades. For example, the total population of the corridor in the year 2000 was estimated to be 37,949. This figure is projected to grow more than 740% to a population of 319,215 by the year 2030, reflecting an average growth rate of 246% per decade, as shown on Table 2-2. Commensurate with this population growth is the rapid expansion of dwelling units within the corridor, which are projected to increase from 19,224 in 2000 to 128,337 in 2030. Interestingly, this projection also indicates an average persons-per-dwelling-unit expansion from 1.97 in the year 2000 to 2.49 in 2030, reflecting the transition of retirement-oriented to more family-oriented development in the future. Similarly, the year 2000 estimated employment of 14,495 is projected to grow 754% to 123,735 by the year 2030. This increase represents a decade-based average growth rate of 75%. The fact that job growth will not keep pace with population growth (on a percentage basis) and the region's transition to working households, could increase the vehicle miles traveled (vmt) per person in the area.

A commensurate increase in density/intensity is also projected to occur as the corridor character changes from rural to suburban-urban as future residents and, to a lesser extent, jobs locate within the SR 303 corridor planning area. In the year 2000, the population density of the region was estimated at 272 persons per square mile. This figure is projected to grow 741% to 2,286 persons per square mile by the year 2030 as shown on Table 2-2. Expectedly, employment intensity in the region is also projected to increase dramatically. In 2000 there were an estimated 104 employees per square mile in the region, while 2030 projections place this figure at 886 employees per square mile—a 30-year increase of 754%.

As illustrated in Chapter 4, these projections are consistent with an overall intensification of all land uses in the region. The percentage rate of growth in residential and employment development is projected to increase from the year 2000 to 2015. After that time the rate of growth is expected to slow from the year 2015 to 2030 as shown on Table 2-3. For example, the corridor planning area population is anticipated to grow nearly 170% from 2003 to 2015. The next 15-year period, between the years 2015 and 2030, is projected to experience only 80% population growth; but the total number of residents is expected to increase by approximately 142,000 people in that second 15-year period. This growth trend is common among all of the growth forecasts presented herein and is primarily attributable to the diminishing land opportunities that will exist as the corridor planning area nears build-out.

Year 2003 MAG growth forecasts for the corridor planning area (as presented in the preceding tables) were created to reflect developments that have been completed as well as those developments currently under construction. Future development in the region is also highlighted to illustrate the magnitude and location of growth as it continues to locate in the West Valley. As expected, existing growth has located in the far north and far south of the corridor planning area within the incorporated cities of Surprise and Goodyear. While the mid-corridor area is strip annexed by the City of Glendale, the lack of infrastructure, presence of Luke AFB and minimal transportation access have impeded growth in the past. Recently several developments have been proposed and are in the final approval stages in the City of Glendale.

Table 2-2 SR 303 Population and Employment Data, 2000-2030

RAZ	Year*	Population	% Chg.**	Employment	% Chg.**	Dwelling Units	% Chg.**	Pop. Density (per sq mi)	% Chg.**	Emp. Density (per sq mi)	% Chg.**
211	2000	316		122		118		8		3	
232	2000	16,114		4,100		10,476		1,127		287	
233	2000	7,319		1,509		2,761		206		42	
254	2000	3,028		855		929		203		57	
255	2000	4,448		1,610		1,705		255		92	
265	2000	6,724		6,299		3,235		339		317	
Total		**37,949**	**N/A**	**14,495**	**N/A**	**19,224**	**N/A**	**272**	**N/A**	**104**	**N/A**
211	2003	1,475		480		531		39		13	
232	2003	19,563		4,521		12,418		1,368		316	
233	2003	23,168		5,633		8,630		651		158	
254	2003	6,909		3,336		2,202		462		223	
255	2003	5,884		2,092		2,252		337		120	
265	2003	9,013		7,360		4,470		454		371	
Total		**66,012**	**74%**	**23,422**	**62%**	**30,503**	**59%**	**473**	**74%**	**168**	**62%**
211	2015	7,520		2,090		2,676		201		56	
232	2015	32,955		7,489		19,818		2,305		524	
233	2015	84,180		18,618		30,733		2,364		523	
254	2015	18,823		11,560		6,185		1,260		774	
255	2015	11,936		5,359		4,546		684		307	
265	2015	22,005		15,696		10,962		1,108		790	
Total		**177,419**	**169%**	**60,812**	**160%**	**74,920**	**146%**	**1,271**	**169%**	**435**	**160%**
211	2030	56,189		12,569		19,661		1,499		335	
232	2030	42,087		7,798		24,654		2,943		545	
233	2030	144,905		47,169		52,263		4,069		1,325	
254	2030	21,784		16,441		7,156		1,458		1,100	
255	2030	16,310		10,106		6,149		935		579	
265	2030	37,940		29,652		18,454		1,910		1,493	
Total		**319,215**	**80%**	**123,735**	**103%**	**128,337**	**71%**	**2,286**	**80%**	**886**	**103%**

*Projections for 2003 and 2015 are interpolated from the 2000, 2010, 2020, 2025, 2030 MAG Interim Projections, June 2003
**Reflects increase from preceding data point year
Because construction employment follows development, employment projections may show declines in future years.
Source: Maricopa Association of Governments, June 2003

Table 2-3 SR 303 Population and Employment Data Summary

Year*	Population	% Chg.**	Employment	% Chg.**	Dwelling Units	% Chg.**	Pop. Density (per sq mi)	% Chg.**	Emp. Density (per sq mi)	% Chg.**
2000	37,949	N/A	14,495	N/A	19,224	N/A	271.76	N/A	103.80	N/A
2003	66,012	74%	23,422	62%	30,503	59%	472.73	74%	167.73	62%
2015	177,419	368%	60,812	320%	74,920	290%	1270.55	368%	435.49	320%
2030	319,215	741%	123,735	754%	128,337	568%	2285.99	741%	886.10	754%

*Projections for 2003 and 2015 are interpolated from the 2000, 2010, 2020, 2025, 2030 MAG Interim Projections, June 2003
**Reflects increase from 2000
Because construction employment follows development, employment projections may show declines in future years.

2.2.2 Traffic Forecasts

MAG supplied the traffic volume forecasts utilizing the regional travel forecasting model. The travel model provided forecasts for the 2015 Initial Freeway Construction Phase (six-lane freeway), the 2030 Ultimate Freeway Phase (eight-lane freeway with HOV lanes) and the 2030 No-Build Alternative.

The 2015 model utilized an interpolated socioeconomic data set from two existing databases, 2010 and 2020. The network in the 2015 model incorporated likely roadway improvements included in the master plans of area communities. The 2015 model also included the current MAG Regional Transportation Improvements planned through 2015.

The 2030 model utilized the adopted 2030 socioeconomic data and included all planned improvements in the MAG Regional Transportation Plan and planned improvements included in the master plans of area communities. Each of the future scenarios is described below.

2015 Initial Freeway Construction

The 2015 Initial Freeway Construction Phase assumes that SR 303L will be improved to a six-lane freeway with grade-separated interchanges. Average daily traffic volumes will range from 57,600 vpd between Bell Road and Grand Avenue (US 60) to 109,600 vpd between Camelback Road and Bethany Home Road. The average daily traffic volume for the corridor is forecast to be about 93,000 vpd. Figure 2-3 shows average daily traffic volumes for the 2015 Initial Freeway Construction Phase.

2030 Ultimate Freeway Phase

The 2030 Ultimate Freeway phase assumes that SR 303L will be widened to a ten-lane freeway (four general purpose lanes and one HOV lane in each direction) with grade-separated interchanges at all one-mile crossroads. Average daily traffic volumes forecasts range from 139,800 vpd between Greenway and Bell to 153,600 vpd between Bethany Home Road and Glendale Avenue. The average daily traffic volume for the corridor will be about 144,000 vpd. Figure 2-4 shows the average daily traffic volumes for the 2030 Ultimate Freeway Phase.

2030 No Build Alternative

The 2030 No Build alternative represents the minimum transportation improvements for the corridor. The elements of this condition are as follows:

- SR 303L will remain a two- and four-lane urban arterial with signalized intersections at one-mile spacing.
- As warranted, intersections will be widened and signalized. Eventually, all major street crossings of SR 303L between McDowell Road and Bell Road will have this treatment.
- Safety improvements as identified in the SR 303L Safety Study dated March 19, 2004 would be implemented over time. These improvements include construction of passing lanes in selected locations.
- The arterial network of parallel and perpendicular streets will be reconstructed to their planned widths as development occurs in the area.
- Northern Parkway would not be built. Although the Northern Parkway is a completely separate project, it is dependent upon SR 303L becoming a freeway.

The No Build traffic forecast assignment based on the recalibrated model was received from MAG in February 2005. This assignment network had all the same elements as the build assignment mentioned above.

The 2030 No Build average daily traffic volumes on SR 303L, cross roads, and adjacent parallel arterials are shown in Figure 2-5.

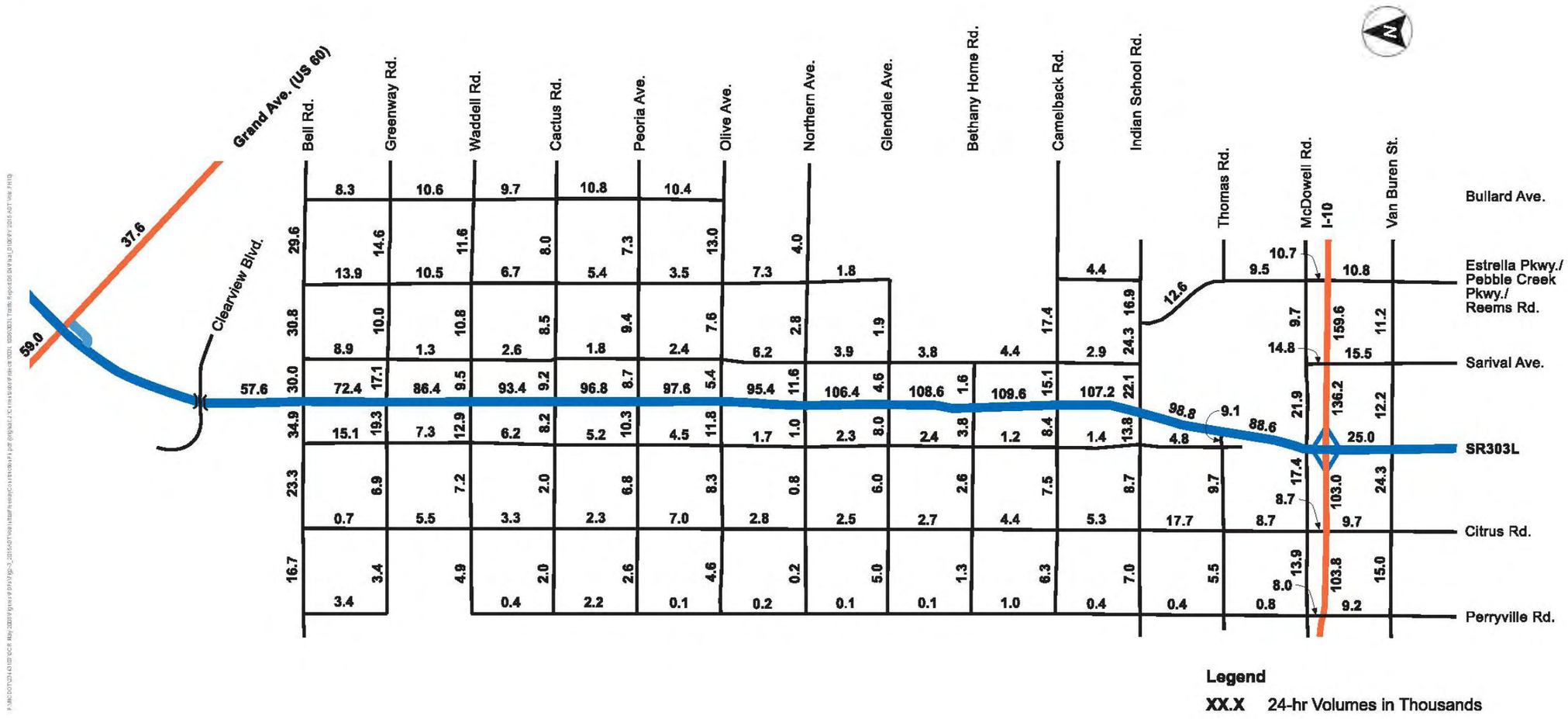

Figure 2-3 Future Year 2015 Average Daily Traffic Volumes

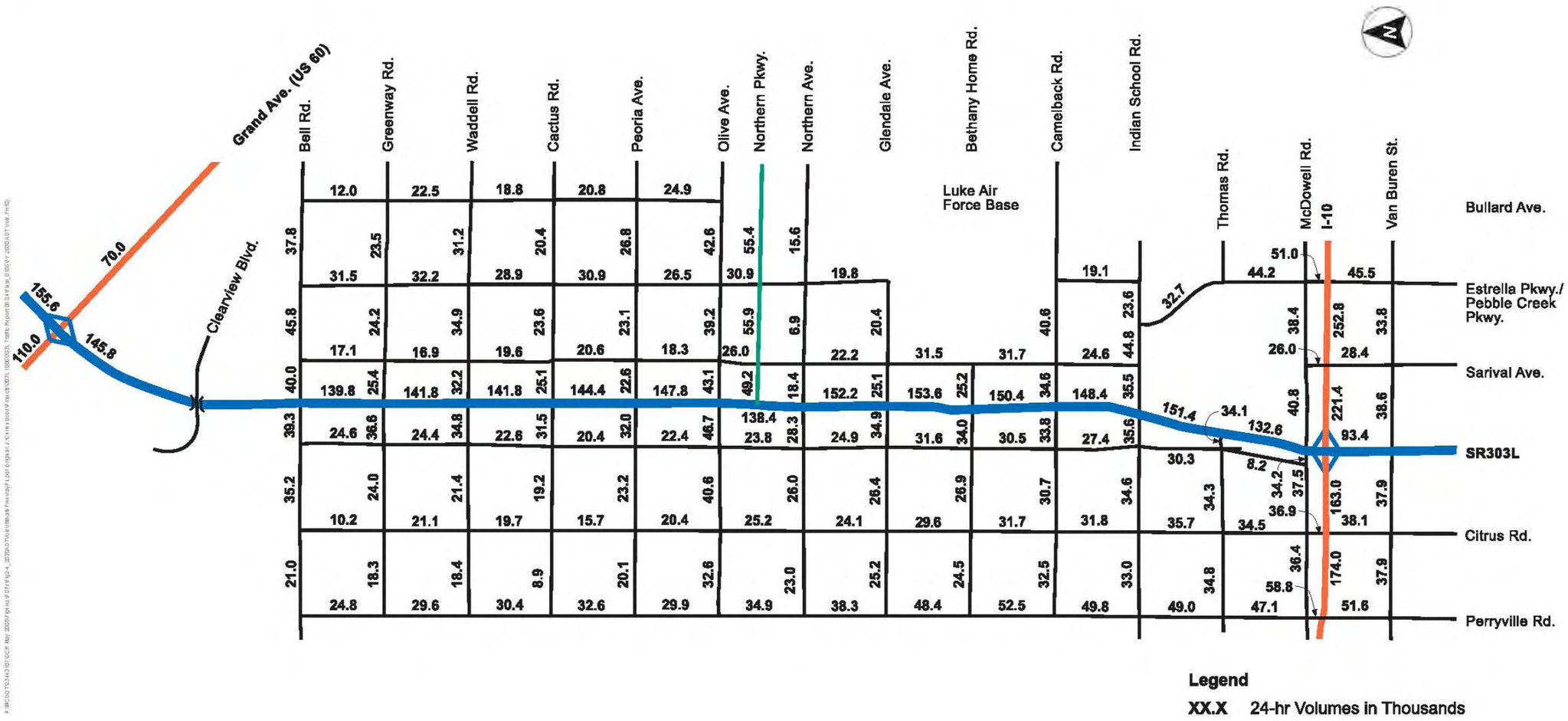

Figure 2-4 2030 Average Daily Traffic Volumes Ultimate Freeway Phase

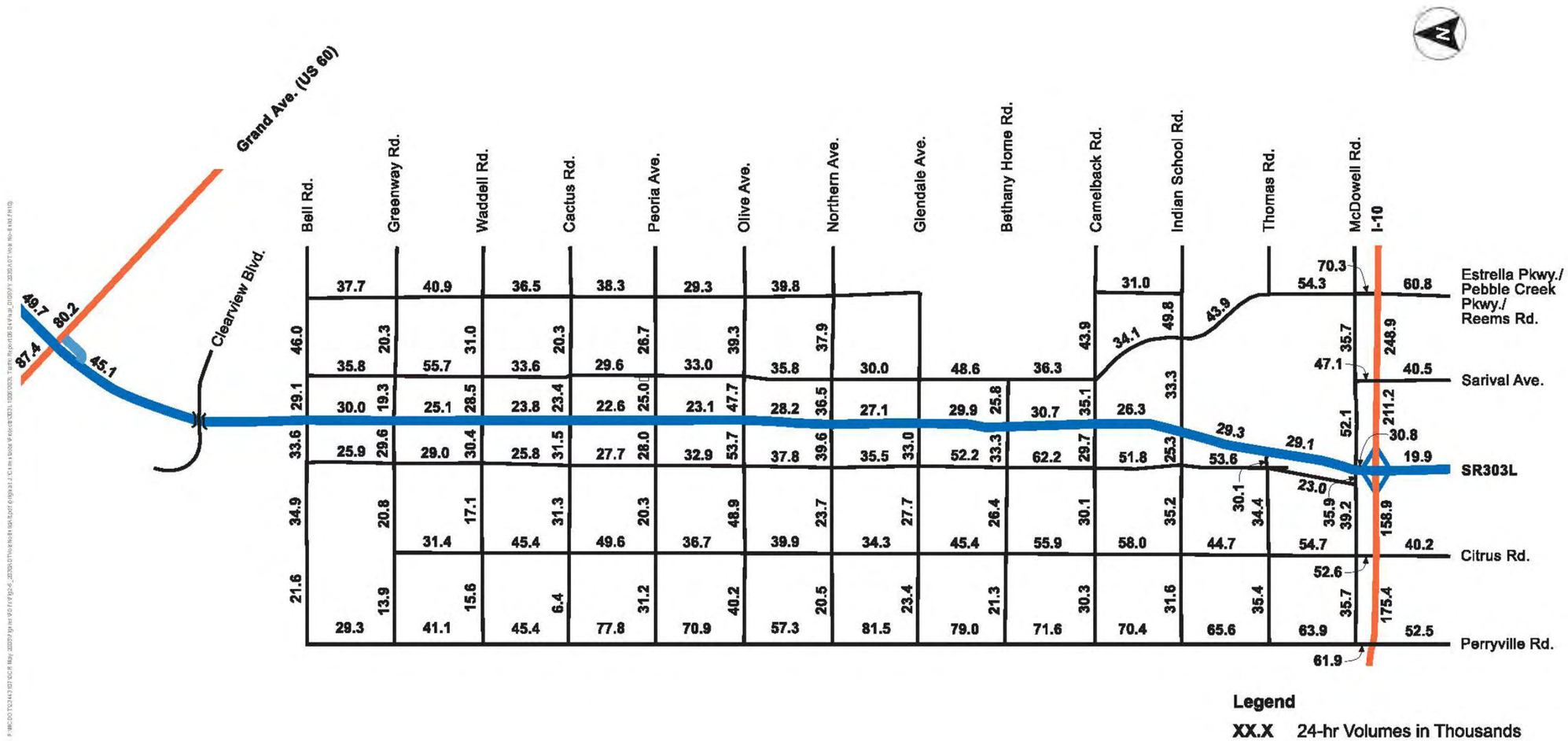

Figure 2-5 2030 Average Daily Traffic Volumes No-Build Alternative

2.3 CURRENT AND FUTURE CAPACITY REQUIREMENTS

If road capacity is available, the traffic forecasts indicate that the volumes on SR 303L could increase from 23,800 vpd in 2006 to 93,000 vpd in 2015 and over 144,000 vpd in 2030. These projections indicate that there is ample demand in the corridor to justify construction of a freeway.

Until 2004, the only traffic signal on SR 303L was at Bell Road. Off-peak travel speeds in the rural sections exceed 60 mph. In 2004 signals were installed at Greenway Road, Olive Avenue, Northern Avenue, and Indian School Road. As the volume continues to increase, traffic signals will be needed at additional existing intersections.

With signals at each mile crossing, it is estimated the average off-peak period speed on SR 303L will be approximately 43 mph. During peak travel times, the average speed could drop to less than 25 mph. Average speeds between 25 and 43 mph would no longer serve the regional function for through traffic and longer-trip traffic. Traffic will seek other routes not designed for higher speed travel including Grand Avenue, Reems Road, Sunrise Boulevard, Cotton Lane, and Sarival Avenue. This diversion of traffic will necessitate improvements on these other routes not currently planned or budgeted. Congestion at the signalized intersections along SR 303L will occur during the peak hours, and accident rates may increase.

The graph in Figure 2-6 shows the projected traffic growth as it relates to the capacities for various types of roadways. The bottom of each band is the LOS C or design capacity of each type of roadway. The top of the band is the LOS E or maximum capacity. The existing volume exceeds the LOS C capacity (design capacity) for a two-lane rural highway or a two-lane urban street. Delays and queues at signalized intersection will continue to increase and more congestion will occur thereby reducing speeds and increasing travel time along the corridor.

A six-lane freeway would accommodate the expected traffic at LOS C or better until almost the year 2020. A ten-lane freeway is expected to accommodate the increase in traffic well beyond the design year 2030.

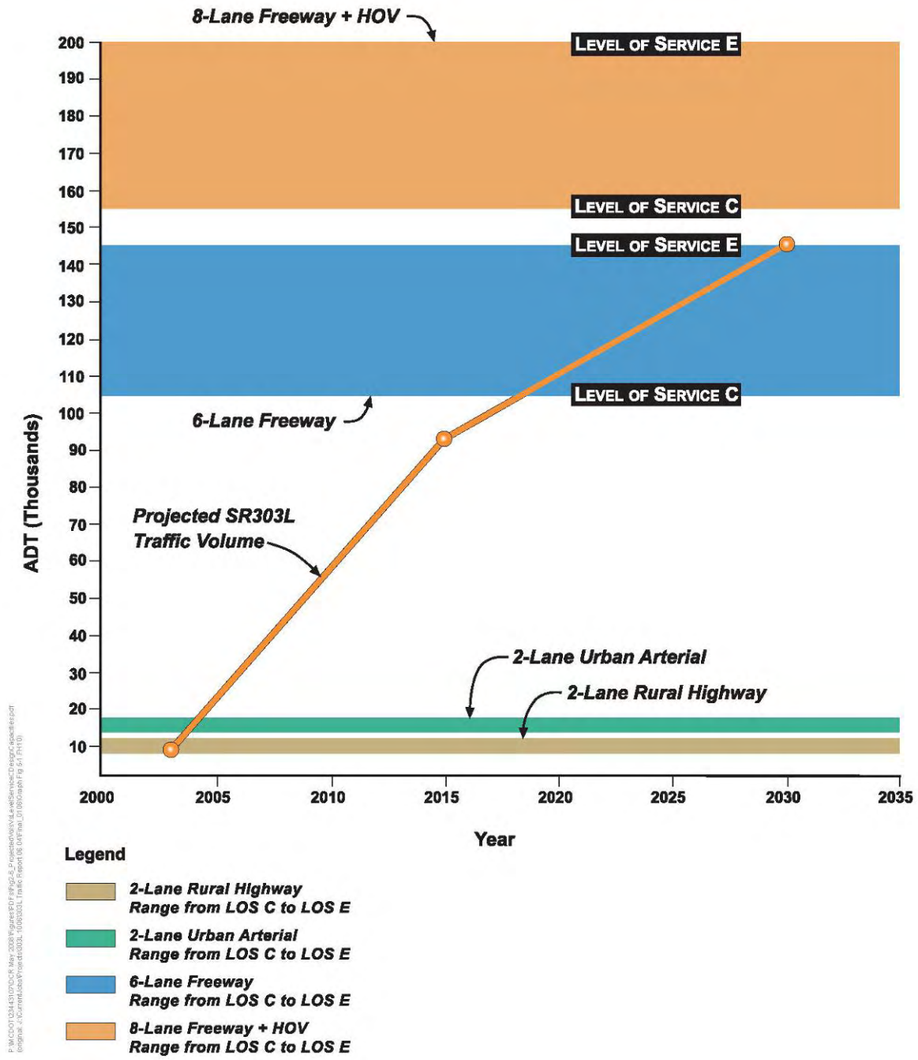

Figure 2-6 Projected Volume versus Level of Service C Design Capacities for Various Types of Roadways

2.4 CURRENT AND FUTURE LEVELS OF SERVICE

This section documents the methodologies used and level of service analysis results for the existing conditions as well as the future conditions projected to occur along the SR 303L corridor from I-10 to Grand Avenue (US 60).

Existing Conditions

SR 303L is currently a two-lane, limited access roadway with 2004 average daily traffic volumes that range from 14,100 vpd north of Clearview Boulevard to 23,800 vpd between Cactus Road and Waddell Road. A comparison of the average daily traffic volumes to calculated capacities indicates that the majority of the SR 303L corridor is currently operating at LOS E during peak periods. With the projected traffic demand illustrated previously on the graph in Figure 2-6, congestion on the existing roadway will continue to increase.

2015 Initial Construction Phase

The 2015 Initial Freeway Construction Phase assumes that SR 303L will be improved to a six-lane freeway with auxiliary lanes between grade-separated interchanges. Average daily traffic volumes will range from 57,600 vpd between Bell Road and Grand Avenue (US 60) to 109,600 vpd between Camelback Road and Bethany Home Road. A traffic level of service analysis was performed for the mainline freeway segments and weaving areas for the peak hour in the peak direction using the methodologies described in the *2000 Highway Capacity Manual*. The results of this analysis indicated that the freeway segments and weaving areas along the SR 303L corridor are expected to operate at LOS C or better for the 2015 Initial Freeway Construction Phase.

2030 Ultimate Freeway Phase

The 2030 Ultimate Freeway Phase assumes that SR 303L from I-10 to Grand Avenue (US 60) consists of a 10-lane freeway (four general use lanes and one HOV lane in each direction) with auxiliary lanes between interchange on- and off-ramps. Interchanges are grade separated and are generally at one-mile spacing. Average daily traffic volumes are expected to be in the range of 144,000 vpd. A traffic level of service analysis was performed for the mainline freeway segment, weaving areas and merge/diverge areas using the methodologies described in the *2000 Highway Capacity Manual*. In addition, a signalized intersection level of service analysis was performed for all ramp terminal/crossroad intersections along the SR 303L corridor using the Synchro 5 software which is based on the methodologies described in the *2000 Highway Capacity Manual*. The analysis results indicate that all freeway segments, weaving areas, ramp merge/diverge areas and signalized intersections are expected to operate at acceptable levels of service with the 2030 Ultimate Freeway Phase. A level of service summary along with design hour volumes and lane line diagrams is presented in Section 12.11.

2030 No Build Alternative

With the No Build alternative, SR 303L will remain as a two-lane and four-lane roadway with signalized intersections and left-turn lanes at each mile. The traffic demand in the corridor exceeds the planned capacity so that the roadway will function at LOS F for several hours per day. The excess traffic demand will also overload the adjacent parallel streets.

2.5 CURRENT AND FUTURE CONGESTION/TRAVEL TIME CONDITIONS

Using the forecasted volumes, an analysis was performed for each segment of the 2003 Existing Condition, 2015 Initial Freeway Construction Phase, 2030 Ultimate Freeway Phase, and the 2030 No-Build Alternative to determine the travel speeds that could be expected on each of the facilities. The analysis utilized the methodology contained in the *2000 Highway Capacity Manual* and determined the travel speed for each segment in the peak direction of the peak hour. The 2030 No-Build Alternative utilized the Urban Arterial Analysis methodology assuming that SR 303L would remain as a two-lane or four-lane facility with signalized intersections at one-mile spacing. The Urban Arterial Analysis assumes that under free-flow conditions travel speeds will be 45 mph. Freeway free-flow speeds are 65 mph.

Segment operating speeds were determined based on the 2015 Initial Freeway Construction Phase and 2030 Ultimate Freeway Phase volumes. Segment speeds for the peak hour/peak direction are shown in Table 2-4. Based on this analysis, it can be seen that the two freeway phases, Initial and Ultimate, would have approximately the same average travel speeds at 58.3 mph and 57.5 mph, respectively. With the No-Build Alternative, travel speeds will deteriorate rapidly in the next few years and average 20.8 mph in 2015 and remain at that level in the future.

Table 2-4 SR 303L Segment Speed Summary

Segment	2003 Existing	2015 Initial Construction	2030 Ultimate Construction	2030 No-Build
I-10 to Thomas Road	42.0	65.0	65.0	20.2
Thomas Road to Indian School Road	42.0	55.8	56.8	20.2
Indian School Road to Camelback Road	42.4	53.5	55.6	20.4
Camelback Road to Bethany Home Road	41.7	56.9	55.4	11.7
Bethany Home Road to Glendale Avenue	42.2	58.2	53.7	14.5
Glendale Avenue to Northern Avenue	42.0	55.5	53.6	22.1
Northern Avenue to Northern Parkway	41.5	65.0	65.0	25.1
Northern Parkway to Olive Avenue	41.5	65.0	65.0	25.1
Olive Avenue to Peoria Avenue	41.4	57.5	52.5	26.5
Peoria Avenue to Cactus Road	42.7	57.7	56.0	26.1
Cactus Road to Waddell Road	41.4	57.3	55.4	24.1
Waddell Road to Greenway Road	42.7	54.6	53.1	21.2
Greenway Road to Bell Road	42.3	49.1	52.8	16.2
Bell Road to Grand Avenue (US 60)	45.1	65.0	65.0	28.9
Weighted Average Segment Speed	42.2	58.3	57.5	21.6
Travel Time from I-10 to Grand Avenue	21.1 minutes	15.3 minutes	15.5 minutes	40.4 minutes

In summary, without significant improvements along SR 303L, travel time along the corridor will continue to increase. In turn, SR 303L will not adequately serve the through and long-trip traffic from US 93 and US 60 to I-10 and will not adequately serve the regional road function within the corridor because it will offer no advantage over parallel roads.

2.6 SAFETY DATA AND ANALYSIS

SR 303L has seen a sharp increase in traffic volumes in the past year after the north and south ends of the interim roadway were constructed and opened to traffic. With this increase in traffic has come an increase in traffic violations and crashes and collisions. In 2000, the Maricopa County Sheriff's Office (MCSO) wrote 114 non-accident traffic citations. In 2003 (January-September), 763 non-accident traffic citations were issued. As such, MCDOT commissioned a separate study to investigate the types of accidents occurring on SR 303 and how they might be reduced. For more information relating to safety, refer to the MCDOT, March 19, 2004 *SR 303 Safety Study*.

The study evaluated and analyzed accident data for the years 2000-September 2003 and existing traffic data were collected from both ADOT and MCSO. The data revealed the following:

- Fifty-two accidents occurred in 2000, 54 in 2001, 60 in 2002, and 69 in 2003 (January-September).
- A total of 235 accidents were reported/investigated. One-hundred seventy-one of the accidents were intersection related while the remaining 64 accidents were mid-block accidents along SR 303.
- Out of the 235 accidents, 111 involved property damage only, 45 had possible injuries, 45 had non-incapacitating injuries, 27 had incapacitating injuries, and 7 were fatal.
- The top three accident locations include: Olive Avenue (45), Indian School Road (32), and Northern Avenue (31).
- The three most severe locations are: Olive Avenue, Northern Avenue, and Indian School Road.
- Severity of accidents has risen with the increase in traffic volumes and speeds.
- Eighty-fifth percentile speeds have reached over 80 mph at some locations along the corridor. Most recorded speeds remain approximately 10 mph over the posted speed limit of 55 mph.

Accident rates along SR 303L have been found to be significantly higher than crash rates for similar types of facilities. An attempt was first made to compare the accident rates along this route with comparable facilities in Arizona. ADOT stopped calculating accident rates by facility type in the late 1980s. The Nevada Department of Transportation regularly publishes accident statistics for the state of Nevada. It was determined that the Nevada accident rates would provide a sound basis to compare the existing and proposed alternatives for SR 303L since Nevada is an adjacent western state with similar demographics, climatic and geographic features. The Nevada data are summarized below in Table 2-5.

Table 2-5 Crash Rates by Roadway Classification

Classification	Statewide Crashes				AVM*	Crash Rate by Facility**			
	PDO	Injury	Fatal	Total		PDO	Injury	Fatal	Total
Freeways & Expressways	2,308	911	9	3,228	20.98	159.61	63.00	0.62	223.24
Urban Principal Arterial	9,236	4,940	48	14,224	21.98	420.15	224.73	2.18	647.06
Minor Arterial Rural	504	271	16	791	5.81	86.68	46.61	2.75	136.04

*Annual Vehicle Miles of Travel in 100 millions
**In Crashes per 100 Million Vehicle Miles
Source: 2002 Nevada Traffic Crashes, Nevada DOT

As can be seen from the table above, published crash rates from the State of Nevada for minor rural arterials shows that average crash rates for minor arterials in that state are 136.04 crashes per 100 million vehicle miles of travel and fatal crash rates are 2.75 fatal crashes per 100 million vehicle miles of travel. Using the historical accident and traffic volume data for SR 303L in the years 2000 through September 2003, it was calculated that the overall accident rate along SR 303L was 173.2 crashes per 100 million vehicle miles of travel. The fatal accident rate for SR 303L was calculated to be 6.3 fatal crashes per 100 million vehicles miles of travel. These rates show that existing SR 303L has an overall crash rate 27% higher than comparable facilities in Nevada and the fatal crash rate is over 130% higher than other minor rural arterials.

According to the National Highway Traffic Safety Administration's National Center for Statistics and Analysis, the overall fatal crash rate for Arizona, for all facility types, in 2002 was 2.18 per 100 million vehicle miles of travel. The rate on SR 303L is 193% higher than the overall fatal crash rate for the State of Arizona.

The crash rate for overall accidents has risen from the rate previously shown in the *Traffic Report for SR 303L from Indian School Road to Clearview Boulevard* dated May 2002. In the 2002 study, the overall crash rate along SR 303L was 142.8 crashes per 100 million vehicles. The crash rate has risen 21% while the fatal crash rate of 6.4 fatal crashes per 100 million vehicles has virtually remained the same.

2.7 CURRENT AND FUTURE MOBILITY AND NETWORK REQUIREMENTS

In an economy where just-in-time shipments are becoming increasingly important to conduct day-to-day business, moving both people and goods is paramount in an efficient transportation system. Higher order roadways, such as freeways, are the backbone to the intra-urban system because they move people and commodities more safely and quickly.

"The total resource costs of urban goods movement are comparable to those of urban person movement … In other words, about half of total urban transportation costs, in economic terms, are related to freight."[4] "Passengers going to shop, going to work, coming from work, going to a restaurant for lunch or dinner, going to a movie, or just going for a drive are indeed making freight related trips. If the trucks from the food and department store warehouses, from suppliers to manufactures, from restaurant and entertainment supply houses, and from highway paving and construction companies had not made their trips, passengers would not be making theirs."[5] Nearly all of the vehicle movements in urban areas are the direct response to freight activities.

Freeways, including the proposed SR 303L, will greatly reduce the costs associated with travel. For example, in Table 2-5, the crash rate for urban arterials is shown to be 189% higher than freeways. In addition, the time to travel SR 303L from I-10 to US 60 would be greatly reduced if the facility were a freeway rather than an urban arterial. See Table 2-4. Therefore, the time savings and safety of travel on freeways versus surface arterials is far superior.

To assist in the movement of people and goods, the surrounding arterial network will need to be improved according to each of the local master plans or as traffic and development warrants.

[4] Ogden, Kenneth Wade, "Urban Goods Movement and Its Relation to Planning" in *Proceedings of the Urban Goods and Freight Forecasting Conference* (Washington, D.C.: FHWA and TMIP, forthcoming, 1998, 2-1 to 2-14).

[5] Capelle, Russell B., "Commodity Flows and Freight Transportation" in Chapter 3 of the Institute of Transportation Engineers *Transportation Planning Handbook*, 2nd Edition (Washington, D.C.: Institute of Transportation Engineers, 1999) pg. 25.

2.8 ACCESS MANAGEMENT

Access management maximizes the safety and efficiency of roadway operations. Limiting the number and frequency of access points minimizes conflicts with through traffic thereby improving roadway safety, increasing capacity and reducing travel time. Below are the current and proposed access management policies regarding SR 303L.

Existing Condition – The existing access management policy for SR 303L is to allow no access along SR 303L. With the initial right-of-way acquisition, access to some agricultural activities were permitted on an interim basis along SR 303L. As additional right-of-way is acquired for the planned freeway, all access points, other than the intersections with the section line arterials, will be closed. Parcels adjacent to SR 303L will have access from the east-west arterial cross streets and not from SR 303L.

Construct Freeway Scenario – If SR 303L is constructed as a freeway, access will be restricted to traffic interchanges generally spaced one mile apart at the section line crossroads. Once constructed, no additional access points are likely to be permitted. Any changes to the freeway access points will need to be approved by ADOT and will need to meet applicable design standards.

No-Build Alternative – If SR 303L does not become a freeway, then the access along the roadway should be maintained as is the existing condition shown above with minimal access along SR 303L.

2.9 CURRENT MUTCD, TRAFFIC SIGNAL, LIGHTING, AND ITS REQUIREMENTS

The following describes the current needs in regard to issues with Manual of Uniform Traffic Control Devices and Intelligent Transportation Systems. For information regarding future needs see Sections 12.18 and 12.19.

Current Manual of Uniform Traffic Control Devices (MUTCD) Requirements

Field observation revealed some immediate needs along the entire SR 303L corridor. These improvements represent the minimum level of improvements that MCDOT should pursue to reduce both accidents and the County's risk exposure. Many of the recommended immediate improvements can be accomplished with existing MCDOT staff, maintenance crews, and equipment. See Table 2-6.

Table 2-6 Recommended Immediate SR 303L Corridor Improvements

Improvement	Relative Cost			Comment
	Low	Moderate	High	
Clear sight triangles at all stop controlled intersections	X			Although most intersections have clear sight distance, some intersections have brush encroaching into the sight triangle.
Provide wide (24-inch) stop bars on minor road approaches	X			
Install/repair rumble strips on intersection approaches	X			Many of the previously installed rumble strips are in disrepair.
Install/restripe pavement messages, such as STOP AHEAD	X			
Replace/repair damaged signs	X			Some signs have been damaged by turning vehicles due to small curb radii, such as the signs at Olive Avenue.
Install oversized stop signs	X			Place standard stop signs with oversized where appropriate.
Retime adjacent signals to create gaps at stop controlled intersections	X			This item should occur as the signals planned for construction are built.
Education – public awareness	X			This may include public outreach programs, PSAs, newsletters, billboards, etc.

Traffic Signals

Traffic signals should be installed at the cross streets as they are warranted. The improvements to the intersections, in conjunction with the signal installation, should include turn lanes for both right and left turning vehicles on SR 303L.

A traffic signal has been in place at Bell Road for several years. Signals and associated intersection improvements have been completed at Indian School Road, Northern Avenue, Olive Avenue and Greenway Road.

Additional intersections will be installed at other section line roads as warranted.

Lighting

Intersection lighting has been installed with all the traffic signals mentioned above.

Current Intelligent Transportation System (ITS) Requirements

There are no ITS systems along the current corridor of SR 303L. See Section 12.19 for information regarding ITS needs with the planned freeway.

Photo radar is one technique that has a very high cost benefit to improve traffic safety on the existing interim roadway. Exploration of such a system is recommended.

2.10 SCHOOL BUS AND TRANSIT SYSTEMS

Existing School Bus Crossings – Many of the school districts neighboring the SR 303L corridor have some concerns regarding school buses crossing SR 303L at stop-signed controlled intersections. No accidents involving school buses were identified in the accident data collected for this study. The five major school bus crossing locations are shown in Figure 2-1 and all are now signalized.

Existing Transit – There is no transit service today in the corridor. Limited transit is planned in the future. See Section 12.20.